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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,392	11/23/2001	George Jackowski	2132.097	4945

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EXAMINER

CHEU, CHANGHWA J

ART UNIT	PAPER NUMBER
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1641

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/993,392

Applicant(s)

JACKOWSKI ET AL.

Examiner

Jacob Cheu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 39-46 is/are pending in the application.
- 4a) Of the above claim(s) 39-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Applicant's amendment filed on 9/1/2005 has been received and entered into record and considered.

The following information provided in the amendment affects the instant application:

1. Claims 2-38 are cancelled.
2. Claim 1 is under examination.
3. For the request of rejoining claims 39-46 under *In re Ochaia* with claim 1, since the current claim 1 is still not allowable (see below), the rejoining would not be considered. Accordingly, claims 39-46 are withdrawn from further consideration.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:
The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
2. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As set forth in *In re Wands*, 858 F.2d 731, 8 USPQ2d 1400 (Fed. Cir. 1988), enablement requires that the specification teach those skilled in the art to make and use the invention without undue experimentation. Factors to be considered in determining, whether a disclosure would require undue experimentation include 1) the nature of the invention, 2) the state of the prior art, 3) the predictability or lack thereof in the art, 4) the amount of direction or guidance present, 5) the presence or absence of working examples, 6) the

quantity of experimentation necessary, 7) the relative skill of those in the art, and 8) the breadth of the claims.

The instant invention directs to a method of diagnosing insulin resistance patients using particular biomarkers, such as residues 2-11 of SEQ ID No. 1, residues 2-12 of SEQ ID No. 2 and residues 2-13 of residues of SEQ ID No. 3 as recited in claim 1.

The instant invention is characterized by the use combination of preparatory steps, e.g. chromatography and I-D tripcine polyacrylamide gel electrophoresis. Subsequent to which the gel is stained, e.g. with Coomassie blue, silver or rubidium. Next, bands are selected from the gels for further study. Tryptic digestion of each band follows, concluding with the extraction of tryptic peptides from the digest. This extraction may be accomplished utilizing C18 ZIPTIPS, or organic extract and dry technique followed by MALDI Qq TOF (Maldi Quadrupole Quadrupole Time of Flight) processing. Additional methodologies may include SELDI MS, gel technology, MALDI MS/MS and time-of-flight detection procedures to maximize the diversity of biopolymers which are verifiable within a particular sample. The cohort of biopolymers verified within a sample develop data indicating their presence, then compared to absence or relative strength/concentration in disease vs normal controls, and further studied to determine whether the up-regulation or down-regulation single biopolymer or group biopolymers is indicative of a disease state or predictive of the development of said disease state (See page 25, last paragraph to the second paragraph of page 26).

The data shows that there is a "up regulation" (appearing a band #9 on the PAGE gel on the insulin patients but not in other normal people). The band 9 is approximately less than 3 KD through proteolytic digestion (See page 38, second paragraph). Through the previous described steps applicant identify certain fragment, such as SEQ ID No. 1, 2 and 3 as the unique biomarkers specific for insulin resistance patients.

In view of the data, the instant invention still suffers insufficiency which would not be enable one ordinary skill in the art to use this invention without undue experimentation. The identified SEQ ID No. markers are for diagnosis purpose. Applicant indicates that mass spectrum profile of the digested peptides, i.e. SEQ ID No. 1-3 with their respective residues, is an indication of the insulin resistance disease (See page 39, first paragraph to page 40, second paragraph). However, in view of the mass spectrum of the peptides as in Figure 2 and 4, there is not explanation or illustration what is the significance or relationship between these peptide fragments and the insulin resistance. Figure 2 is merely a trypsin digested spectrum graph depicting ion 1208, whereas Figure 4 is a trypsin digested spectrum graph depicting ion 1447. There is no indication which graph represents insulin resistance patients. There is no indication where are the SEQ ID No. fragments or the corresponding relationship to the insulin resistance. Ultimately, there lacks a scientific *nexus* between the mass spectrum of the recited SEQ ID No. 1-3 and the target disease (emphasis added).

Furthermore, in a recent article (Zhang et al. Neurobiology of Aging, Vol. 26, page 207 (2005)), the authors Zhang et al. had conducted studies using similar methods as described in the instant invention, i.e. a proteomic approaches for two-dimensional gel differential electrophoresis coupling with mass spectrometry analysis. The study by Zhang et al. was aiming to identify biomarkers of common age-related neurodegenerative disease (See whole document). Zhang et al. had identified around 30 proteins with >20% change in concentration between older and younger individuals (See Abstract and Results). However, Zhang et al. do not conclude that these 30 proteins as biomarkers, rather Zhang et al. suggest the data of those proteins are a “value platform” and invite for further experimentation and confirmation (See page 214, right column, second paragraph; left column, last paragraph).

In view of the guidance of *In re Wands*, 8 USPQ2d 1400, it has been determined that the level of experimentation required to enable the breadth of the claims is undue. Patent protection is granted in return for an enabling disclosure of an invention, not for vague

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intimations of general ideas that may not be workable. See *Brenner v. Manson*, 383 U.S. 519, 536, 148 USPQ 689, 696 (1966). While every aspect of a generic claim does not have to be carried out by an inventor, or exemplified in the specification, reasonable detail must be provided in order to enable members of the public to understand and carry out the invention. *Genetech Inc. v. Novo Nordisk A/S* ICAFCI 42 USPQ2d 1001. That requirement has not been met in this specification with respect to the biopolymer consisting residues 2-11 of SEQ ID No. 1, residues 2-12 of SEQ ID No. 2 or residues 2-13 of residues of SEQ ID No. 3 as recited in claim 1 for diagnosis of insulin resistance. Therefore, in view of the insufficient guidance in the specification, extensive experimentation would be required to enable the claims and to practice the invention as claimed.

Response to Applicant's Applicant

Applicant's newly submitted article by Patterson et al. (Physiology Genomics Vol 2, page 59-65, 2000) has been considered. Applicant's arguments mainly review the methodology used in the current invention, e.g. Figure 1 to Figure 3, are within ordinary skill in the art. Particularly, applicant points out the article of Patterson outlines the general procedure to conduct the proteomic study on isolation and identification of potential protein biomarkers by mass spectrometry (See page 64, left column). Applicant also points out one of the study performed by Weinberg et al. documented in the Patterson et al. article for its analogous approaches adopted in the instant invention. Applicant argues that Weinberg et al. identify biomarkers for hyperplasia and prostate cancer based on differential expression peptide fragments which is similar to the current invention, albeit applicant focuses on the insulin resistance patients instead.

Applicant's arguments have been considered but are not persuasive.

Examiner acknowledges the usefulness of using mass spectrometry to identify the differential expression of peptide fragments in various diseases as reviewed by the

Patterson et al. article, especially the study of Weinberg et al. pointed out by the applicant. However, as indicated by a recent Zhang et al. article as discussed in this Office Action, the discrepancy of the protein expression of the diseases versus normal people cannot be conclusively confirmed as a biomarker for said disease. Supra. Zhang et al. raise concerns on the relationship of the disease and the expression of the peptide fragment- "*is this a cause or consequence of disruption of the blood-brain barrier during aging process as indicated by others?*" (See page 214, left column, second paragraph) In addition, Zhang et al. also points out the limitation of such approach as to whether the expression of the peptide fragment is due to inherent highly abundant occurring of said peptide fragment "*in an individual or distributed over all participant*" (See page 214, left column, third paragraph). The development of mass spectrometry analysis has progressed for decades. Yet, in the recent article (2005) of Zhang et al. discloses that the uncertainty still remains and further studies are invited to confirm the validity of this approach (See page 214, right column, last paragraph). In view of the aforementioned lack of predictability in the art, undue experimentation would be required to practice the claimed methods with a reasonable expectation of success. Accordingly, the enablement rejection on 35 USC 112, first paragraph, is maintained and deemed proper.

Conclusion

3. No claim is allowed.
4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Cheu whose telephone number is 571-272-0814. The examiner can normally be reached on 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

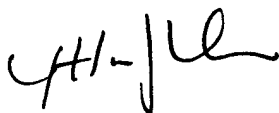
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Jacob Cheu

Examiner

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September 13, 2005



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SUPERVISORY PATENT EXAMINER
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09/18/05